

What is claimed is:

1. A fabric treatment composition comprising

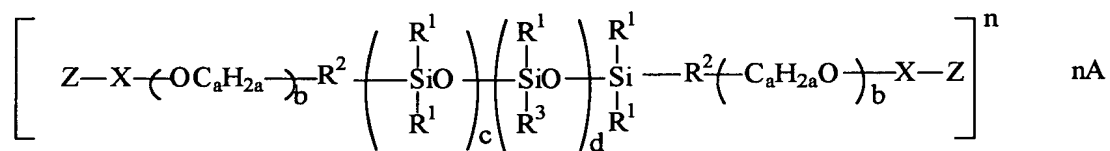
- 5 (a) at least one cationic silicone polymer comprising one or more polysiloxane units and one or more quaternary nitrogen moieties; and
 (b) one or more nitrogen-free silicone polymers;

wherein the ratio, by weight, of the cationic silicone polymer to the nitrogen-free silicone
 10 polymer is from about 10:1 to about 0.01:1.

2. A fabric treatment composition according to Claim 1, wherein the ratio, by weight, of the
 cationic silicone polymer to the nitrogen-free silicone polymer is from about 1:1 to about
 0.1:1.

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3. A fabric treatment composition according to claim 1 wherein the cationic silicone polymer
 has the formula:



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wherein:

- R¹ is independently selected from the group consisting of C₁₋₂₂ alkyl, C₂₋₂₂ alkenyl, C₆₋₂₂ alkylaryl, aryl, cycloalkyl, and mixtures thereof;
- R² is independently selected from the group consisting of divalent organic moieties;
- 25 - X is independently selected from the group consisting of ring-opened epoxides;
- R³ is independently selected from polyether groups having the formula:



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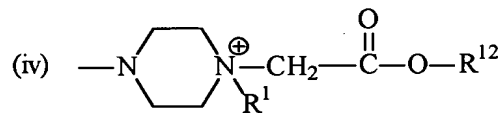
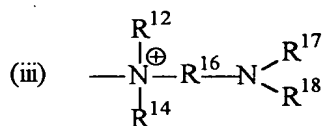
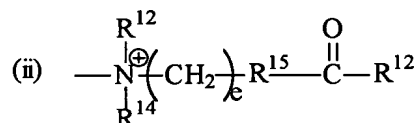
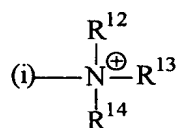
wherein M¹ is a divalent hydrocarbon residue; M² is independently selected from the group

consisting of H, C₁₋₂₂ alkyl, C₂₋₂₂ alkenyl, C₆₋₂₂ alkylaryl, aryl, cycloalkyl, C₁₋₂₂ hydroxyalkyl, polyalkyleneoxide, (poly)alkoxy alkyl, and mixtures thereof;

- Z is independently selected from the group consisting of monovalent organic moieties comprising at least one quaternized nitrogen atom;

5 - a is from about 2 to about 4; b is from 0 to about 100; c is from about 1 to about 1000; d is from 0 to about 100; n is the number of positive charges associated with the cationic silicone polymer, which is greater than or equal to about 2; and A is a monovalent anion.

4. A fabric treatment composition according to claim 3 wherein Z is independently selected
10 from the group consisting of:



(v) monovalent aromatic or aliphatic heterocyclic group, substituted or unsubstituted, containing at least one quaternized nitrogen atom;

wherein:

- R¹², R¹³, R¹⁴ are the same or different, and are selected from the group consisting of C₁₋₂₂
15 alkyl, C₂₋₂₂ alkenyl, C₆₋₂₂ alkylaryl, aryl, cycloalkyl, C₁₋₂₂ hydroxyalkyl, polyalkyleneoxide, (poly)alkoxy alkyl, and mixtures thereof;

- R¹⁵ is -O- or NR¹⁹;

- R¹⁶ is a divalent hydrocarbon residue;

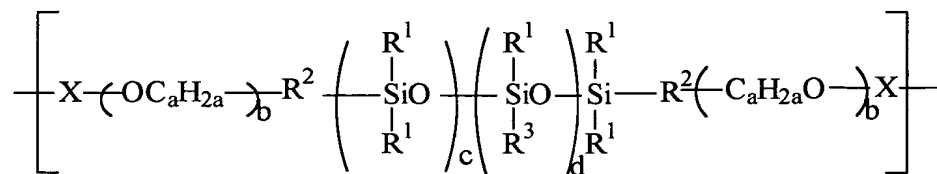
- R¹⁷, R¹⁸, R¹⁹ are the same or different, and are selected from the group consisting of H,
20 C₁₋₂₂ alkyl, C₂₋₂₂ alkenyl, C₆₋₂₂ alkylaryl, aryl, cycloalkyl, C₁₋₂₂ hydroxyalkyl, polyalkyleneoxide, (poly)alkoxy alkyl, and mixtures thereof; and

- e is from about 1 to about 6.

5. A fabric treatment composition according to claim 1 wherein the cationic silicone polymer

is composed of alternating units of:

(i) a polysiloxane of the following formula:



5

; and

(ii) a divalent organic moiety comprising at least two quaternized nitrogen atoms;

wherein:

- R^1 is independently selected from the group consisting of C_{1-22} alkyl, C_{2-22} alkenyl, C_{6-22} alkylaryl, aryl, cycloalkyl, and mixtures thereof;
- 10 - R^2 is independently selected from the group consisting of divalent organic moieties;
- X is independently selected from the group consisting of ring-opened epoxides;
- R^3 is independently selected from polyether groups having the formula:



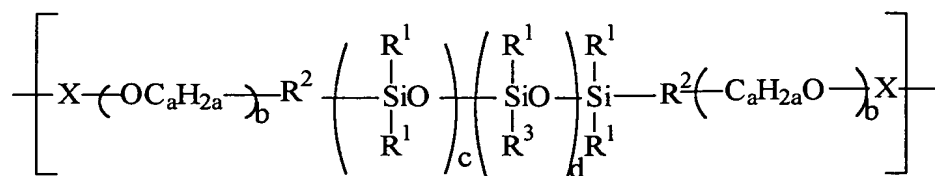
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wherein M^1 is a divalent hydrocarbon residue; M^2 is independently selected from the group consisting of H, C_{1-22} alkyl, C_{2-22} alkenyl, C_{6-22} alkylaryl, aryl, cycloalkyl, C_{1-22} hydroxyalkyl, polyalkyleneoxide, (poly)alkoxy alkyl, and mixtures thereof;

20 - a is from about 2 to about 4; b is from 0 to about 100; c is from about 1 to about 1000; and d is from 0 to about 100.

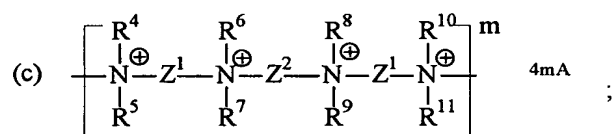
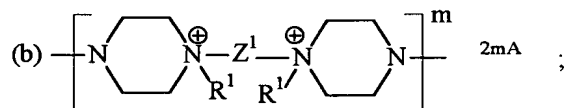
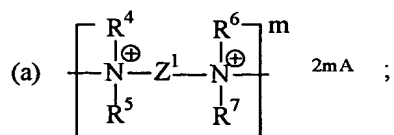
6. A fabric treatment composition according to claim 1 wherein the cationic silicone polymer is composed of alternating units of:

25 (i) a polysiloxane of the following formula:



; and

(ii) a cationic divalent organic moiety selected from the group consisting of:



(d) a divalent aromatic or aliphatic heterocyclic group, substituted or unsubstituted, containing at least one quaternized nitrogen atom; and

5 mixtures thereof;

wherein R^1 is independently selected from the group consisting of C_{1-22} alkyl, C_{2-22} alkenyl, C_{6-22} alkylaryl, aryl, cycloalkyl, and mixtures thereof;- R^2 is independently selected from the group consisting of divalent organic moieties;

- X is independently selected from the group consisting of ring-opened epoxides;

10 - R^3 is independently selected from polyether groups having the formula:15 wherein M^1 is a divalent hydrocarbon residue; M^2 is independently selected from the group consisting of H, C_{1-22} alkyl, C_{2-22} alkenyl, C_{6-22} alkylaryl, aryl, cycloalkyl, C_{1-22} hydroxyalkyl, polyalkyleneoxide, (poly)alkoxy alkyl, and mixtures thereof;- $R^4, R^5, R^6, R^7, R^8, R^9, R^{10}, R^{11}$ are the same or different, and are selected from the group consisting of C_{1-22} alkyl, C_{2-22} alkenyl, C_{6-22} alkylaryl, aryl, cycloalkyl, C_{1-22} hydroxyalkyl, polyalkyleneoxide, (poly)alkoxy alkyl and mixtures thereof; or in which R^4 and R^6 , or R^5 and R^7 , or R^8 and R^{10} , or R^9 and R^{11} are components of a bridging alkylene group;20 - Z^1 and Z^2 are the same or different divalent hydrocarbon groups each comprising at least about 2 carbon atoms;

- a is from about 2 to about 4; b is from 0 to about 100; c is from about 1 to about 1000; d is from 0 to about 100;

- m is the number of positive charges associated with the cationic divalent organic moiety, which is greater than or equal to about 2; A is an anion; and

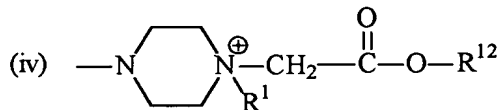
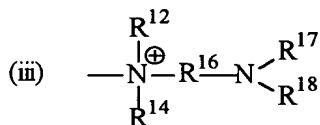
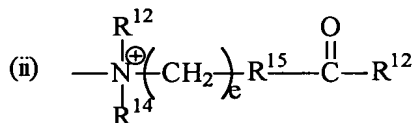
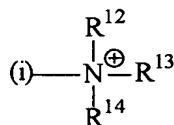
5 wherein, expressed as fractions on the total moles of the organosilicone – free moieties, and the cationic divalent organic moiety (ii) is present at of from about 0.05 to about 1.0 mole fraction.

7. A fabric treatment composition according to claim 6 wherein the cationic silicone further
10 comprises a polyalkyleneoxide amine of formula:



15 wherein Y is a divalent organic group comprising a secondary or tertiary amine; a is from about 2 to about 4 and b is from 0 to about 100; and the polyalkyleneoxide amine is present of from 0.0 to about 0.95 mole fraction.

8. A fabric treatment composition according to claim 6 wherein the cationic silicone further
20 comprises an end-group cationic monovalent organic moiety selected from the group consisting of:



(v) monovalent aromatic or aliphatic heterocyclic group, substituted or unsubstituted, containing at least one quaternized nitrogen atom;

wherein:

- R^{12} , R^{13} , R^{14} are the same or different, and are selected from the group consisting of C_{1-22} alkyl, C_{2-22} alkenyl, C_{6-22} alkylaryl, C_{1-22} hydroxyalkyl, polyalkyleneoxide, (poly)alkoxy

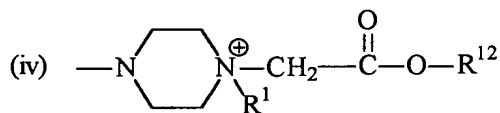
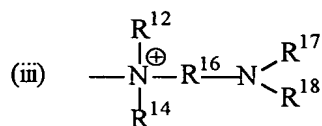
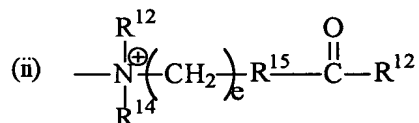
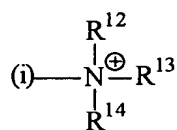
alkyl groups, and mixtures thereof;

- R¹⁵ is -O- or NR¹⁹;

- R¹⁶ is divalent hydrocarbon residue;

- R¹⁷, R¹⁸, R¹⁹ are the same or different, and are selected from the group consisting of H, C₁₋₂₂ alkyl, C₂₋₂₂ alkenyl, C₆₋₂₂ alkylaryl, aryl, cycloalkyl, C₁₋₂₂ hydroxyalkyl, polyalkyleneoxide, (poly)alkoxy alkyl, and mixtures thereof; e is from about 1 to about 6; and the cationic monovalent organic moiety is present of from 0 to about 0.2 mole fraction.

9. A fabric treatment composition according to claim 7 wherein the cationic silicone further comprises an end-group cationic monovalent organic moiety selected from the group consisting of:



- (v) monovalent aromatic or aliphatic heterocyclic group, substituted or unsubstituted, containing at least one quaternized nitrogen atom;

wherein:

- R¹², R¹³, R¹⁴ are the same or different, and are selected from the group consisting of C₁₋₂₂ alkyl, C₂₋₂₂ alkenyl, C₆₋₂₂ alkylaryl, C₁₋₂₂ hydroxyalkyl, polyalkyleneoxide, (poly)alkoxy alkyl groups, and mixtures thereof;

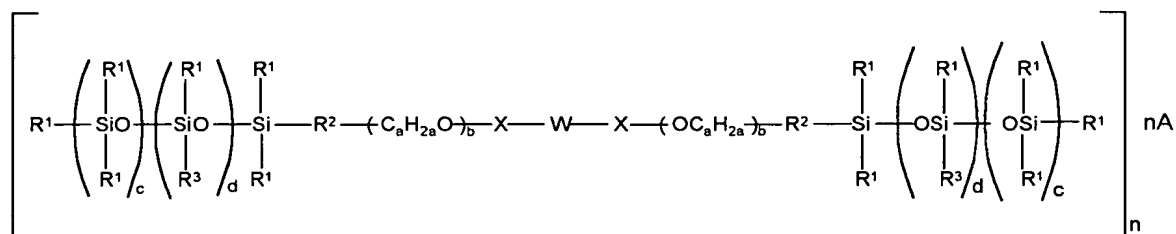
- R¹⁵ is -O- or NR¹⁹;

- R¹⁶ is divalent hydrocarbon residue;

- R¹⁷, R¹⁸, R¹⁹ are the same or different, and are selected from the group consisting of H, C₁₋₂₂ alkyl, C₂₋₂₂ alkenyl, C₆₋₂₂ alkylaryl, aryl, cycloalkyl, C₁₋₂₂ hydroxyalkyl, polyalkyleneoxide, (poly)alkoxy alkyl, and mixtures thereof; e is from about 1 to about 6; and the cationic monovalent organic moiety is present of from 0 to about 0.2 mole fraction.

10. A fabric treatment composition according to claim 1 wherein the cationic silicone polymer

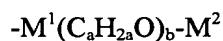
has the formula:



wherein:

- 5 - R¹ is independently selected from the group consisting of C₁₋₂₂ alkyl, C₂₋₂₂ alkenyl, C₆₋₂₂ alkylaryl, aryl, cycloalkyl, and mixtures thereof;
- R² is independently selected from the group consisting of divalent organic moieties;
- X is independently selected from the group consisting of ring-opened epoxides;
- R³ is independently selected from polyether groups having the formula:

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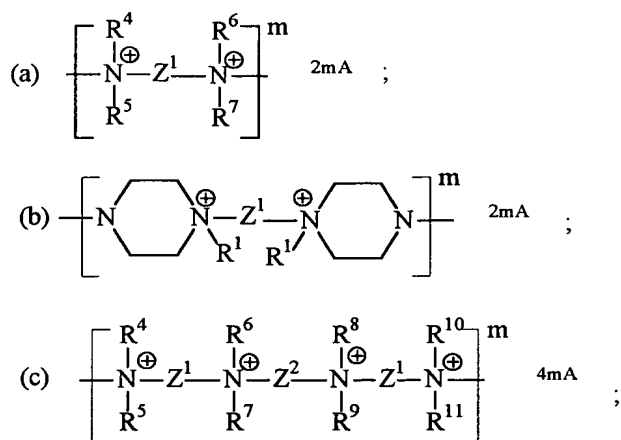
wherein M¹ is a divalent hydrocarbon residue; M² is selected from the group consisting of H, C₁₋₂₂ alkyl, C₂₋₂₂ alkenyl, C₆₋₂₂ alkylaryl, aryl, cycloalkyl, C₁₋₂₂ hydroxyalkyl, polyalkyleneoxide, (poly)alkoxy alkyl, and mixtures thereof;

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- W is independently selected from the group consisting of divalent organic moieties comprising at least one quaternized nitrogen atom;
- a is from about 2 to about 4; b is from 0 to about 100; c is from about 1 to about 1000; d is from 0 to about 100; n is the number of positive charges associated with the cationic silicone polymer, which is greater than or equal to about 1; and A is a counterion.

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11. A fabric treatment composition according to claim 10 wherein W is selected from the group consisting of:



(d) a divalent aromatic or aliphatic heterocyclic group, substituted or unsubstituted, containing at least one quaternized nitrogen atom; and

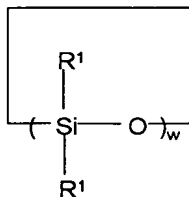
mixtures thereof;

wherein $\text{R}^4, \text{R}^5, \text{R}^6, \text{R}^7, \text{R}^8, \text{R}^9, \text{R}^{10}, \text{R}^{11}$ are the same or different, and are selected from the group consisting of C_{1-22} alkyl, C_{2-22} alkenyl, C_{6-22} alkylaryl, aryl, cycloalkyl, C_{1-22} hydroxyalkyl, polyalkyleneoxide, (poly)alkoxy alkyl, and mixtures thereof; or in which R^4 and R^6 , or R^5 and R^7 , or R^8 and R^{10} , or R^9 and R^{11} are components of a bridging alkylene group;

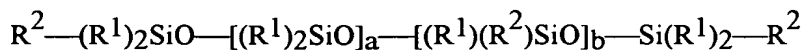
- m is the number of positive charges associated with the cationic divalent organic moiety, which is greater than or equal to about 2; A is an anion; and

- Z^1 and Z^2 are the same or different divalent hydrocarbon groups comprising each at least about 2 carbon atoms.

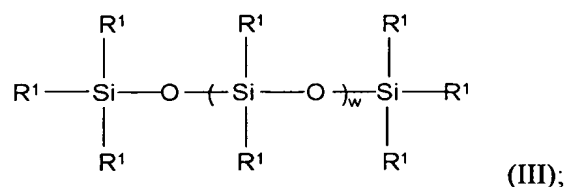
12. A fabric treatment composition according to Claim 1 wherein the nitrogen-free silicone polymer is selected from nonionic nitrogen-free silicone polymers having a formulae selected from (I) to (III):



(I);

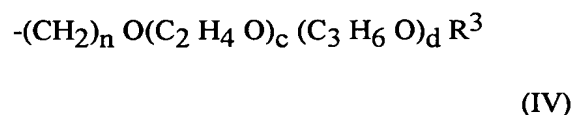


(II);



and mixtures thereof,

5 wherein each R^1 is independently selected from the group consisting of linear, branched or cyclic alkyl groups having from about 1 to about 20 carbon atoms; linear, branched or cyclic alkenyl groups having from about 2 to about 20 carbon atoms; aryl groups having from about 6 to about 20 carbon atoms; alkylaryl groups having from about 7 to about 20 carbon atoms; arylalkyl and arylalkenyl groups having from about 7 to about 20 carbon atoms, and mixtures thereof; each R^2 is independently selected from the group consisting of
 10 linear, branched or cyclic alkyl groups having from about 1 to about 20 carbon atoms; linear, branched or cyclic alkenyl groups having from about 2 to about 20 carbon atoms; aryl groups having from about 6 to about 20 carbon atoms; alkylaryl groups having from about 7 to about 20 carbon atoms; arylalkyl; arylalkenyl groups having from 7 to 20 carbon atoms and from a poly(ethyleneoxide/propyleneoxide) copolymer group having the
 15 general formula (IV):



20 wherein at least one R^2 is a poly(ethyleneoxy/propyleneoxy) copolymer group, and each R^3 is independently selected from the group consisting of hydrogen, alkyl groups having about 1 to about 4 carbon atoms, acetyl groups, and mixtures thereof, wherein the index w has the value as such that the viscosity of the nitrogen-free silicone polymer of formulae (I) and (III) is between about $2 \cdot 10^{-6} \text{ m}^2/\text{s}$ (about 2 centistokes at 20°C) and about $50 \text{ m}^2/\text{s}$ (about 50,000,000 centistokes at 20°C); wherein a is from about 1 to about 50; b is from about 1 to about 50; n is from about 1 to about 50; total c (for all polyalkyleneoxy side groups) has a value of from about 1 to about 100; total d is from 0 to about 14; total $c+d$
 25 has a value of from about 5 to about 150.

13. A fabric treatment composition according Claim 1, further comprising one or more laundry

adjunct materials selected from the group consisting of:

- (a) stabilizers;
 - (b) surfactants selected from the group consisting of nitrogen-free nonionic surfactants, nitrogen-containing surfactants and anionic surfactants, and mixtures thereof;
 - 5 (c) coupling agents;
 - (d) detergent builders;
 - (e) fabric substantive perfumes;
 - (f) scavenger agents selected from the group consisting of fixing agents for anionic dyes, complexing agents for anionic surfactants, clay soil control agents, and mixtures
 - 10 thereof;
 - (g) enzymes;
 - (h) chelating agents;
 - (i) solvent systems;
 - (j) effervescent systems; and
 - 15 (k) mixtures thereof.
14. Use of a fabric treatment composition according to Claim 1 wherein the composition is a rinse-added fabric softening composition or a fabric finishing composition or a laundry detergent composition, and combinations thereof.
- 20 15. Use of a fabric treatment composition according to Claim 1 to impart on a fabric substrate at least one or more fabric care benefits selected from the group consisting of reduction of wrinkles benefits; removal of wrinkles benefits; prevention of wrinkles benefits; fabric softness benefits; fabric feel benefits; garment shape retention benefits; garment shape
- 25 recovery benefits; elasticity benefits; ease of ironing benefits; perfume benefits; color care benefits; and mixtures thereof.
16. A method for treating a substrate comprising contacting the substrate with a fabric treatment composition according to Claim 1.
- 30 17. A process for preparing a fabric treatment composition according to Claim 10 comprising the step of a) premixing the nitrogen-free silicone polymer with the cationic silicone polymer; b) premixing all other ingredients; and c) combining said two premixes a) and b).